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Combined Transportation, Emergency, & Communication Center (CTECC)

part of an evolving
INTELLIGENT TRANSPORTATION SYSTEM
for the
Texas Department of Transportation
AUSTIN DISTRICT

January 27, 2005

Texas Department of Transportation

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A Partnership of Performance

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- 3 Primary Purposes of CTECC:
  - 9-1-1, 3-1-1 Call-taking and Dispatch
    - City of Austin
    - Travis County
  - Transportation Management
    - TXDOT
    - Capital Metro
  - Emergency Operations Center (EOC)
    - City of Austin
    - Travis County

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CTECC OBJECTIVE

- **Coordination of Emergency Incident Responses**
  - Regional approach to multi-jurisdictional issues
  - Integration of related systems
  - Coordinate response resources
  - Expedite rescue efforts
  - Reduce costs
  - Seamless exchange of information between agencies
  - Improved safety of public and personnel

CTECC OBJECTIVE

- **Real-Time sharing of Traffic Information between all agencies**
  - Reduce congestion on roadway corridors
  - Improved response routing recommendations
  - Enhanced Emergency Response coordination
  - Earlier incident identification
  - Earlier intervention/ mitigation
  - Integrated detection, signalization and incident management systems

CTECC OBJECTIVE

- **Integrated Systems and Data Analysis**
  - Real-Time status monitoring/reporting
    - *Improved Public Safety response times*
    - *Improved transit and transportation service delivery*
  - Dynamic Assessment of System Performance
    - *Better system evaluation/ modification*
  - Public Information
    - *Driving / Routing decisions*
    - *Reduced travel times, costs, environmental*
    - *Avoid additional incident development*

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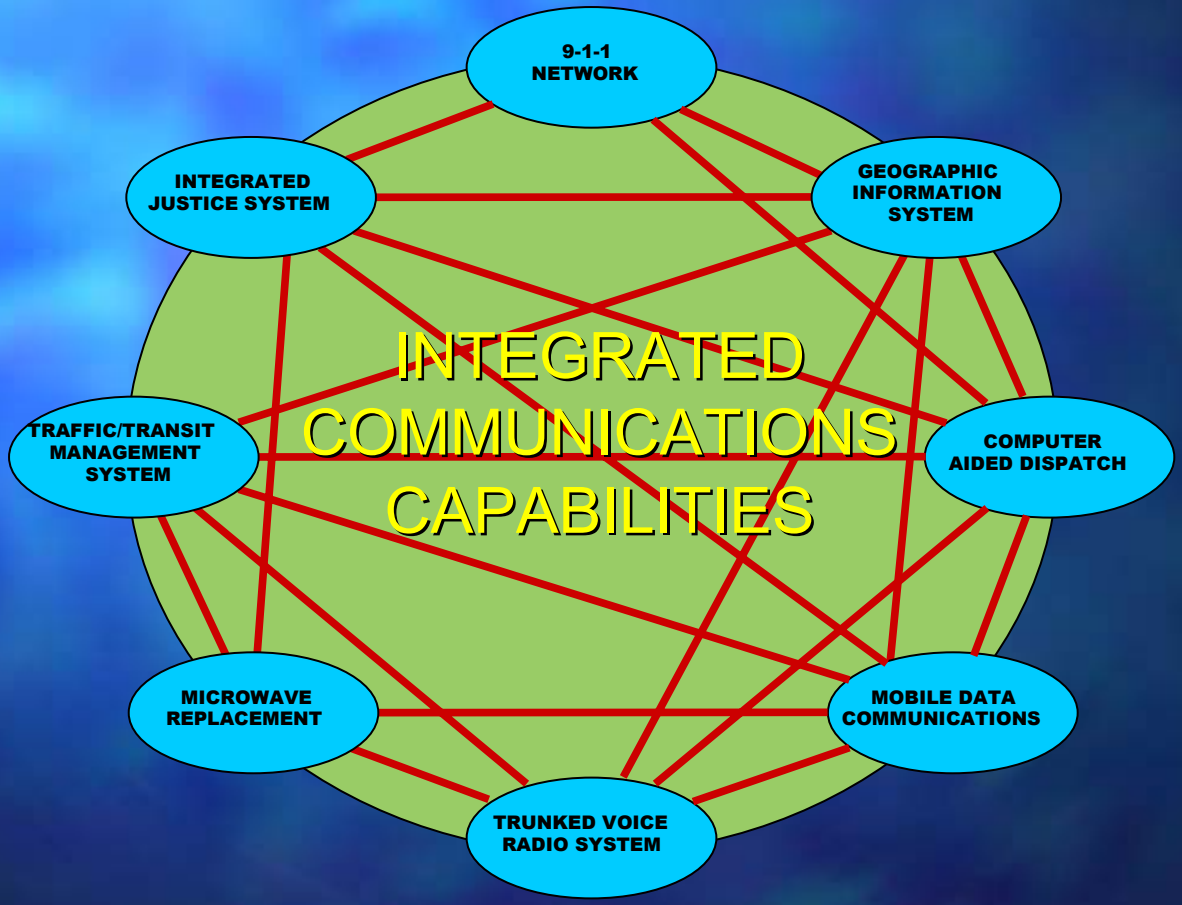
CTECC OBJECTIVE



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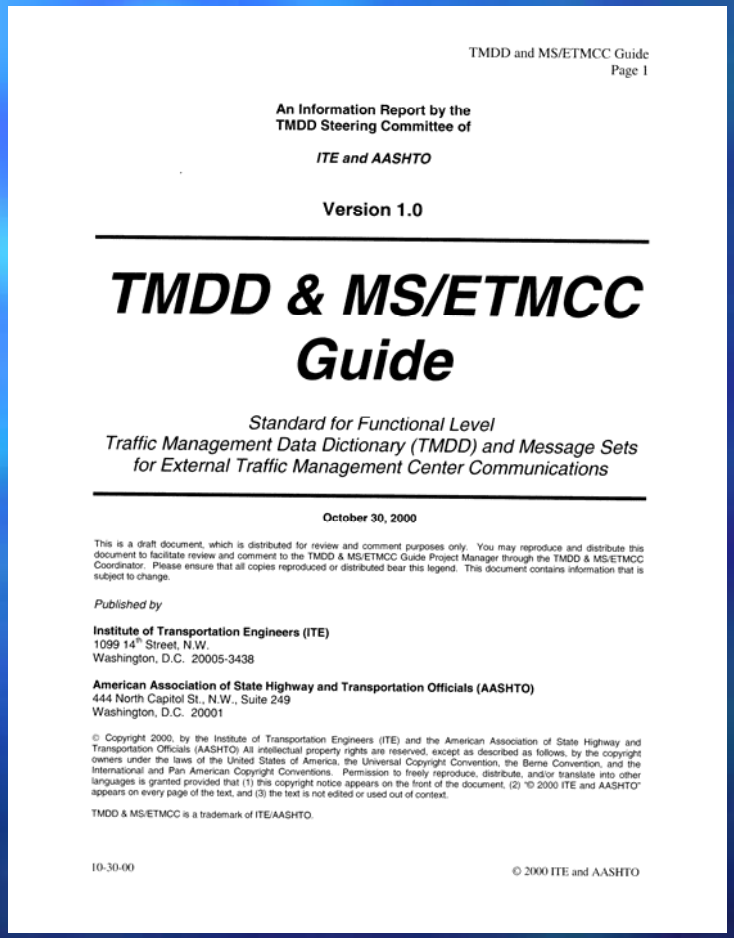

TMDD and MS/ETMCC Guide
Page 1

An Information Report by the TMDD Steering Committee of

ITE and AASHTO

Version 1.0

TMDD & MS/ETMCC Guide

Standard for Functional Level
Traffic Management Data Dictionary (TMDD) and Message Sets
for External Traffic Management Center Communications

October 30, 2000

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Center-to-Center Communications

Status Interface Control Document

C2C-SICD-3.1.2

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May 4, 2004

Data Item Description	Data Type and Size	Req'd	Detailed Data Description	
Density	Integer – 2 bytes		Measured in volume/mile (0 – 4,000).	New: 1.0 Mod: 3.1.0
Occupancy	Integer – 2 bytes		Measured as the percent of time, within a given time period in seconds, that a point on the roadway is occupied by vehicles (0 – 100).	New: 1.0
	Total – 154 bytes			

2.2.5 Incident Data

The Incident Data message contains information about a specific unplanned event, such as an accident, stalled vehicle, hazardous material spill, etc. Incidents are typically tracked and updated from their detection to their final disposition. The incident data is described in Table 6.

Table 6. Incident Data

Data Item Description	Data Type and Size	Req'd	Detailed Data Description	Change History
Network identifier	ASCII – 36 bytes	√	Unique alphanumeric identifier of network.	New: 1.1
Incident identifier	ASCII – 36 bytes	√	Unique alphanumeric identifier for the incident.	New: 1.0
Incident description	ASCII – 256 bytes		Text description of incident.	New: 2.3
Roadway name	ASCII – 64 bytes		Roadway on which incident occurred.	New: 1.0
Cross street name	ASCII – 64 bytes		Nearest cross street to incident.	New: 1.0
Location – latitude	Integer – 4 bytes	√	ISO/IEC 6709; microdegrees, (–90,000,000 to +90,000,000).	New: 1.0
Location – longitude	Integer – 4 bytes	√	ISO/IEC 6709; microdegrees, (–180,000,000 to +180,000,000).	New: 1.0
Location – link identifier	ASCII – 36 bytes		Unique alphanumeric ID for links relating back to roadway network. Can be used in lieu of lat/lon.	New: 1.0
Direction	Integer – 2 bytes		Enumerated value representing start–to–end general lane direction: 0 ⇒ Unknown 1 ⇒ North 2 ⇒ Northeast 3 ⇒ East 4 ⇒ Southeast 5 ⇒ South 6 ⇒ Southwest 7 ⇒ West 8 ⇒ Northwest	New: 2.2
Incident status	Integer – 2 byte		Enumerated value: 0 ⇒ Unknown 1 ⇒ Incident detected 2 ⇒ Incident verified 3 ⇒ Incident moved 4 ⇒ Incident cleared 5 ⇒ Traffic queue cleared	New: 1.0

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CTECC ITS Deployment Program

FY00 Integration Component	
9-1-1RDMT	$ 800,000
FY01 Integration Component	
9-1-1RDMT	$ 400,000
Round Rock/Williamson Co.	$ 400,000
FY02 Integration Component	
City of Austin	$ 200,000
FY03 Integration Component	
Round Rock/Williamson Co.	$ 500,000
City of Austin	$ 500,000

FY 2000 ITS Integration

9-1-1RDMT

- Develop Regional Systems Architecture
- Integrate TxDOT ATMS and CAD
- Integrate TxDOT ATMS and GIS
- Integrate TxDOT ATMS and City Signals
- Integrate TxDOT Courtesy Patrol and CAD/MDC/AVL

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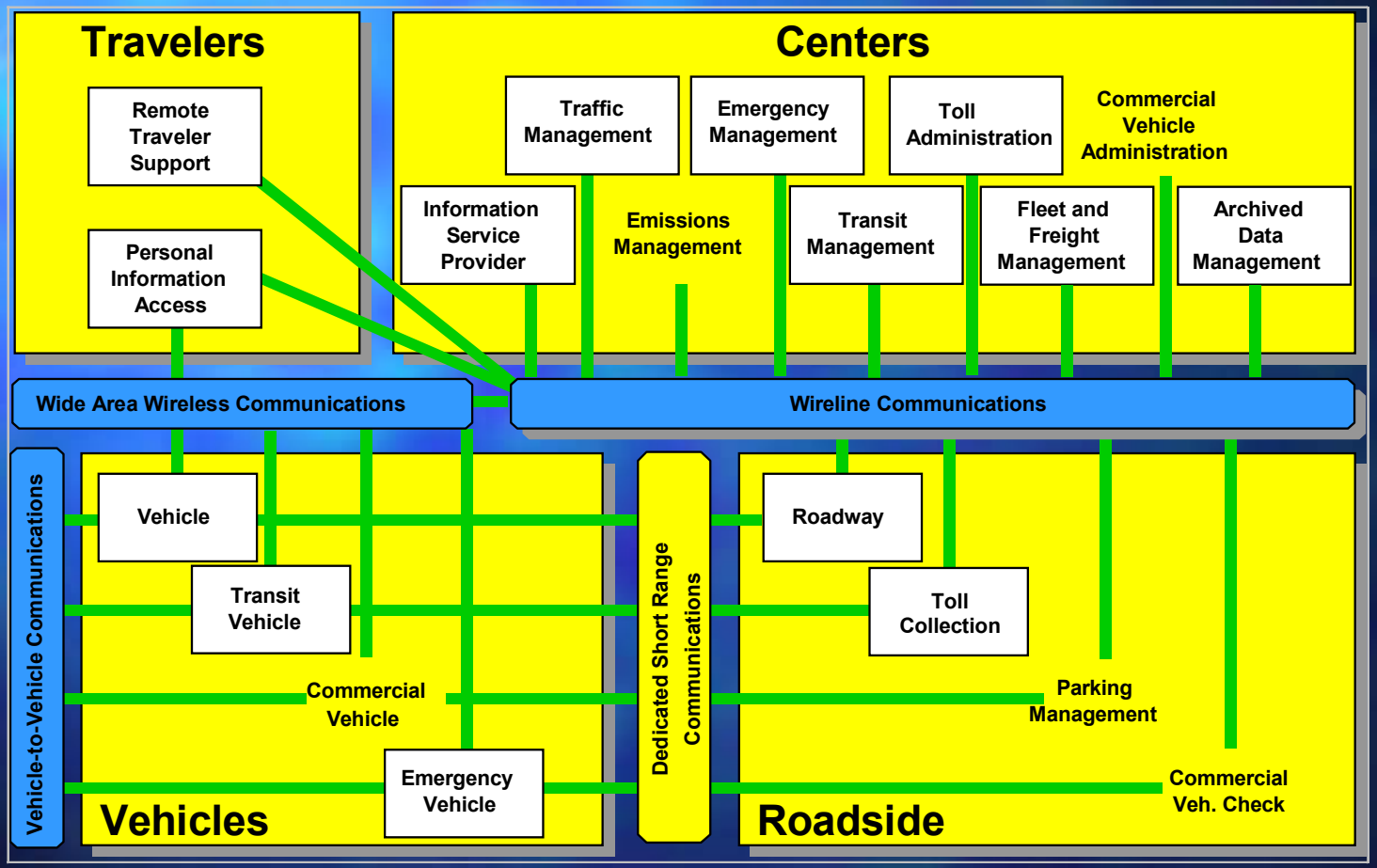
REGIONAL ITS ARCHITECTURE



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FY 2001 ITS Integration

9-1-1RDMT

- Integrate TxDOT ITS and Incident Command System
- Integrate 9-1-1RDMT Project systems with browser for Internet ATIS

FY 2001 ITS Integration

Round Rock/Williamson County

- Integrate TxDOT ATMS and CAD (2)

FY 2000/2001 ITS Integration

Integrate ATMS ⇔ CAD

Incident Data

Road Closure

Speed Data+

+ 9-1-1RDMT only

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VisiCAD Command Server

TRITECH SOFTWARE SYSTEMS

TxDOT ATMS

TxDOT Data Provider

TxDOT Data Extractor

Center to Center

VisiCAD TxDOT Interface

TxDOT Data Extractor

TxDOT Data Provider

Interface acts as server on this socket

Interface acts as a client on this socket

Receives Incident data and lane information

Sends subscription request and VisiCAD created incidents to TxDOT ATMS

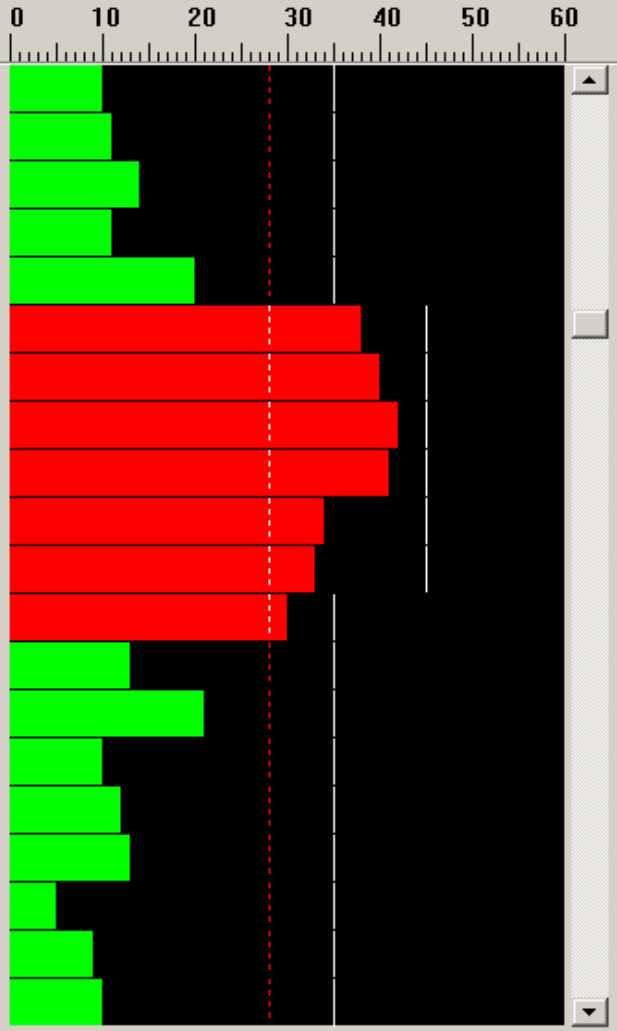
Level of Service Display

Select Roadway:

US 0183 Northbound

Select Graph:

Detector Station	Volume 1 Minute	Speed (mph)	Occupancy (%) Actual	Occupancy (%) Threshold	A - F
Ohlen Rd. N. F2	27	23	10	35	C
Ohlen Rd. N. F3	29	22	11	35	C
Metric Blvd. F1	21	46	14	35	D
Metric Blvd. F2	21	43	11	35	C
Metric Blvd. F3	24	37	20	35	E
Mopac South F1	8	5	38	45	F
Mopac South F2	8	11	40	45	F
Mopac South F3	14	12	42	45	F
Stoneylake S. F1	6	8	41	45	F
Stoneylake S. F2	6	4	34	45	F
Stoneylake S. F3	8	-	33	45	F
Loop 360 N. F1	25	23	30	35	F
Loop 360 N. F2	16	17	13	35	D
Loop 360 N. F3	24	25	21	35	E
Great Hills S. F1	20	40	10	35	C
Great Hills S. F2	22	35	12	35	D
Great Hills S. F3	25	37	13	35	D
Great Hills S. F4	11	39	5	35	B
Great Hills N. F1	26	74	9	35	C
Great Hills N. F2	22	50	10	35	C



Close

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ATMS Austin System

File Edit Control View Help

Incidents | Closures | Maint. | CAM | MAP | LOS | LCS | DMS | RAMP | ?

Road Closures

Location	Block(s)	Lane(s)	Closure #	Status	Start Date	End Date
Eastbound at US HWY 290 RAMP		Freeway Lanes	255	Active	10/20/2004	11/19/2004
US0079 US HWY 79 Northbound at TRADE		Freeway Lanes	262	Active	10/25/2004	11/20/2004
Westbound at US HWY 290 Turnaround		Frontage Road	306	Active	11/ 1/2004	11/30/2004
FM0685 F M 685 Southbound at Brushy Cre		Freeway Lanes	312	Active	11/ 3/2004	11/20/2004
FM0685 F M 685 Northbound at PRIEM		Freeway Lanes	313	Active	11/ 3/2004	11/20/2004
CS MC NEIL Westbound at BURNET		Freeway Lanes	335	Active	11/ 9/2004	3/31/2005
RM0620 F M 620 Eastbound at GANZERT L		Freeway Lanes	342	Active	11/12/2004	4/30/2005

Open

New

Ready | ATMS Active | DMS Active | NUM

RM0620 F M 620 Eastbound at GANZERT LAKE Closure Number: 0342

Road Closure Report Page

Roadway
RM0620 F M 620 Eastbound

Beginning at
GANZERT LAKE
Block
TxRef Marker 546+0.226
Entrance Ramp
Exit Ramp
Traffic Signal Involved

Ending at
SHADY
Block
TxRef Marker 546+1.585
Entrance Ramp
Exit Ramp
Traffic Signal Involved

Current Status
ACTIVE
Set Roadway Devices
Active
Cancel
Close

Lanes Closed
Freeway
Frontage
All Lanes


Entrance Ramp
Exit Ramp
Interchange
Connector

REQUIRED FIELDS in BLUE

Begin Closure
Date: 11/12/2004
Time: 10:40
Day: Friday

End Closure
Date: 04/30/2005
Time: 16:00
Day: Saturday

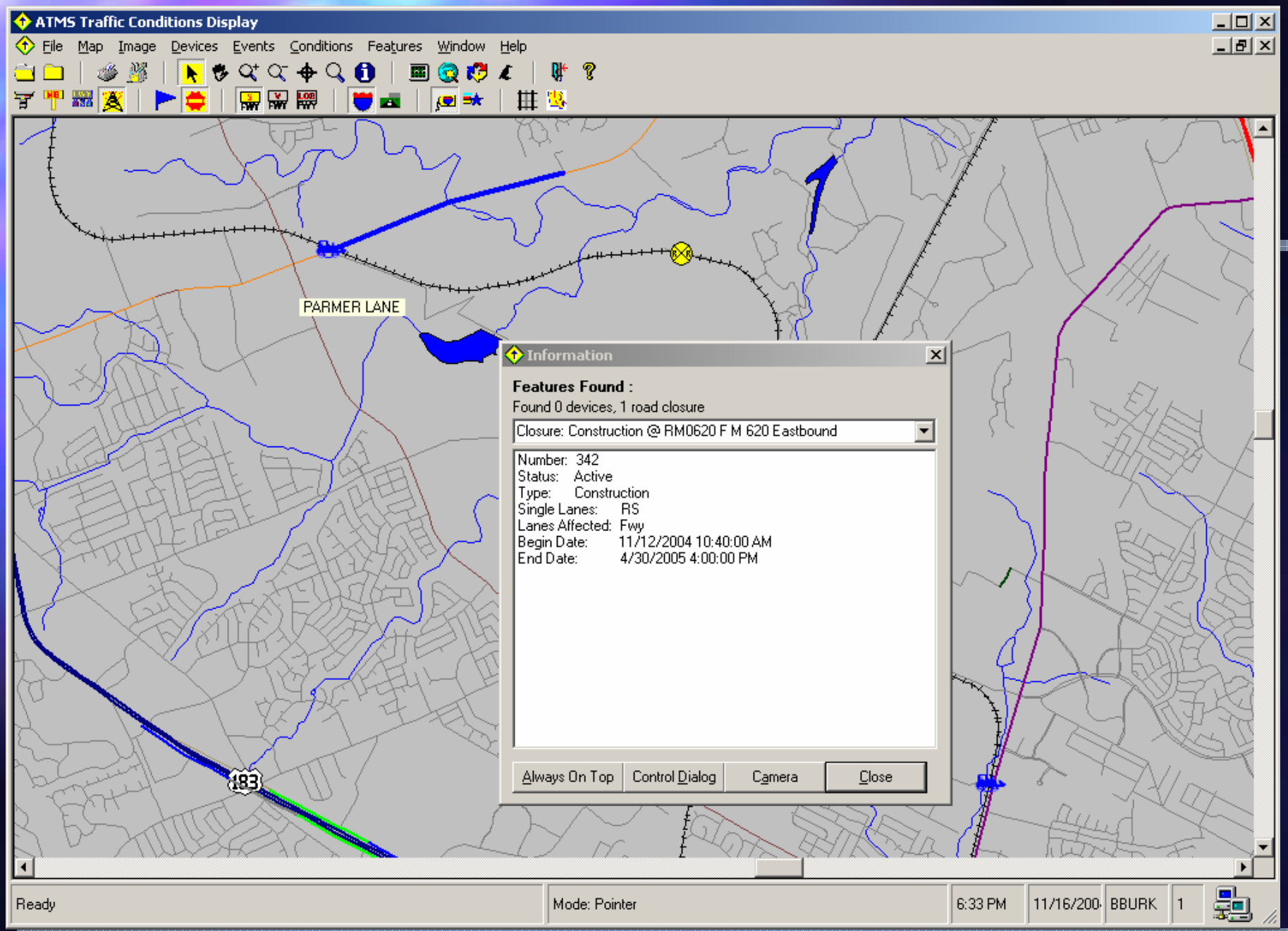
Days Closed
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday

Type
Construction
Maintenance
High Water
Snow
Ice
Athletic Event
Other

Responsibility
TxDOT
Contractor
Other

Comments:
Main lanes closed until further notice.

OK Cancel


ATMS Traffic Conditions Display
File Map Image Devices Events Conditions Features Window Help
PARMER LANE
183
Information
Features Found :
Found 0 devices, 1 road closure
Closure: Construction @ RM0620 F M 620 Eastbound
Number: 342
Status: Active
Type: Construction
Single Lanes: RS
Lanes Affected: Fwy
Begin Date: 11/12/2004 10:40:00 AM
End Date: 4/30/2005 4:00:00 PM
Always On Top
Control Dialog
Camera
Close
Ready
Mode: Pointer
6:33 PM
11/16/200
BBURK
1

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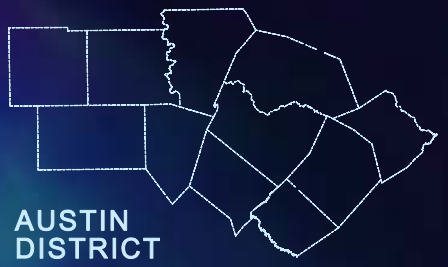


ATMS Austin System

File Edit Control View Help

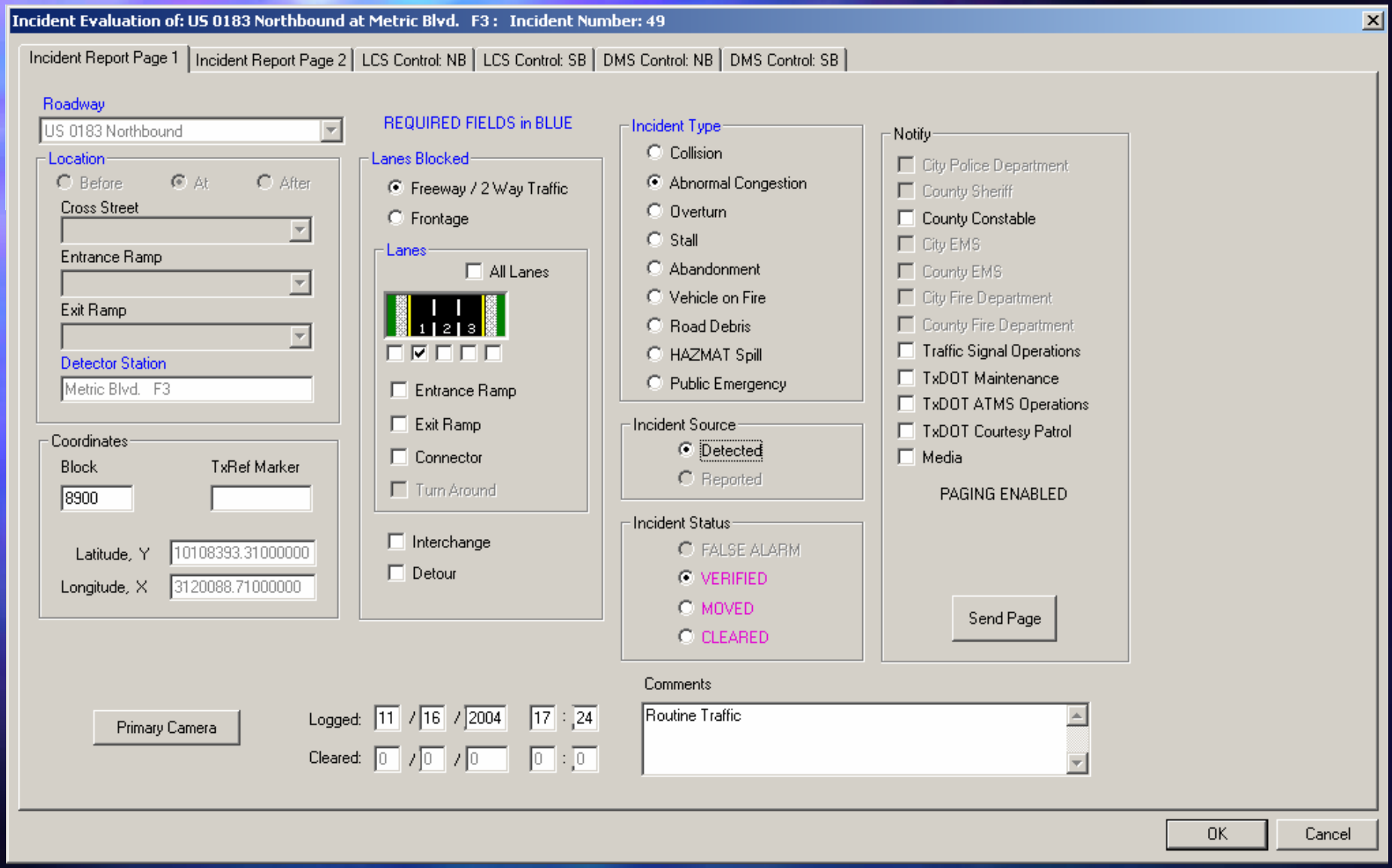
Incidents | Closures | Maint. | CAM | MAP | LOS | LCS | DMS | RAMP | ?

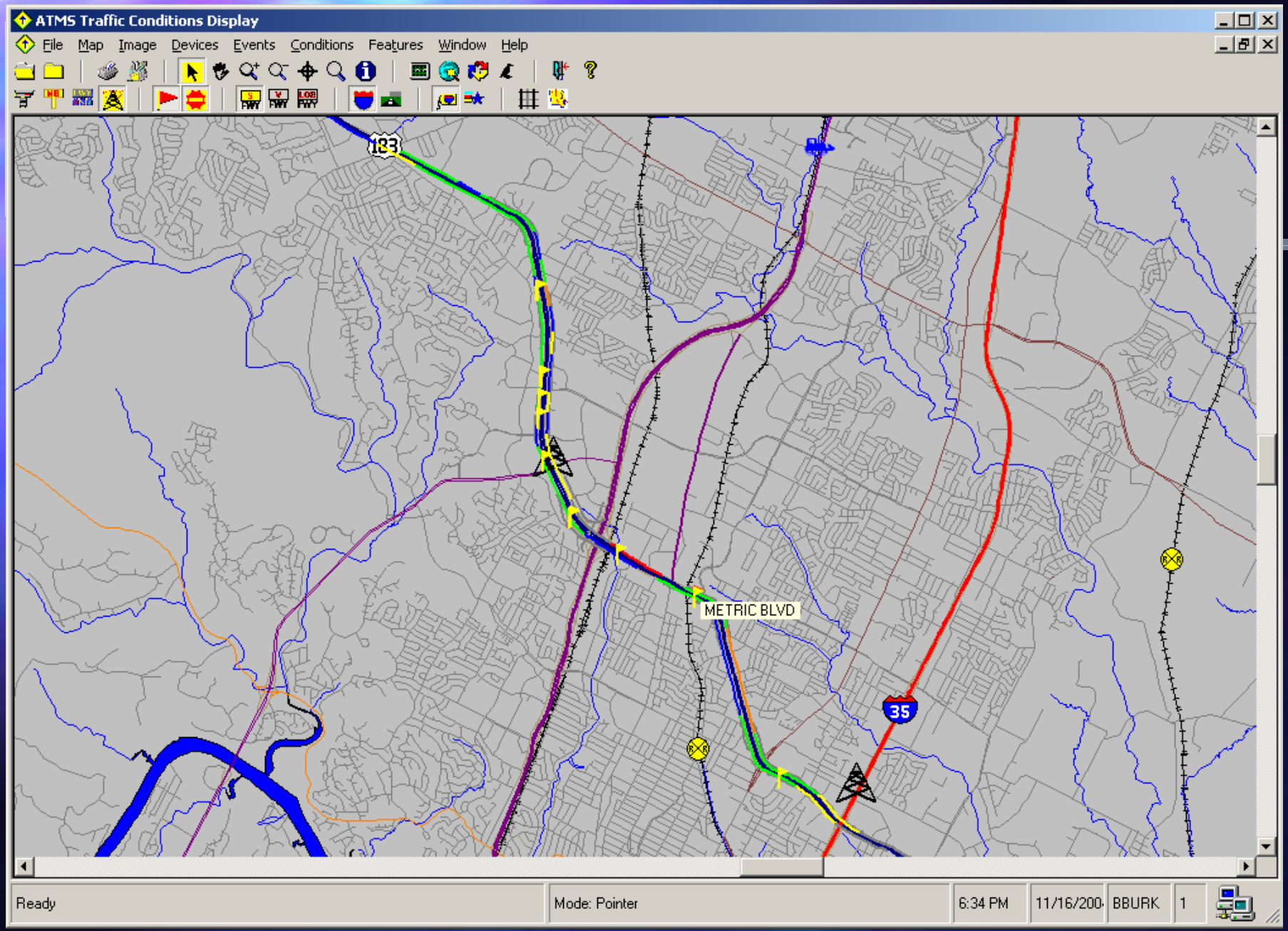
Current Incidents

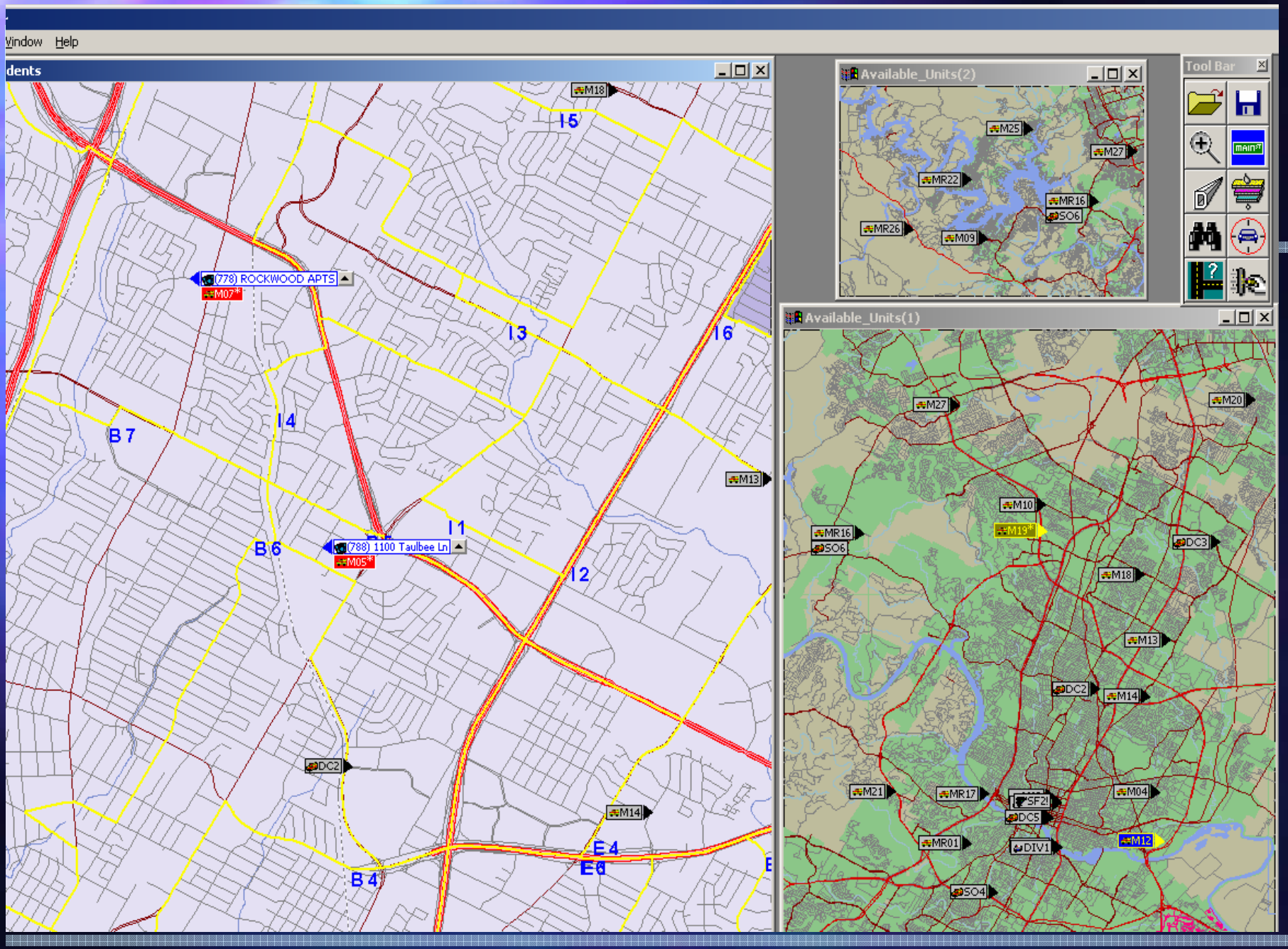
Location	Block	Incident	Type	Time	Duration	Status / Source	Notified	Operator
LOOP 1 Southbound at BRAKER LN F2	10300	52		18:09	0 hr., 21 min.	Identified / Detected 3 times		
183 Northbound at Mopac South F2	9200	51	Congestion	17:28	1 hr., 2 min.	Identified / Detected 2 times		
183 Northbound at Metric Blvd. F1	8900	50	Congestion	17:25	1 hr., 5 min.	Identified / Detected 4 times		
183 Northbound at Metric Blvd. F3	8900	49	Congestion	17:24	1 hr., 6 min.	Verified / Detected		BBURK
183 Northbound at Great Hills N. F3	10200	48	Congestion	17:21	1 hr., 9 min.	Identified / Detected		
183 Northbound at Mopac South F1	9200	47	Congestion	17:19	1 hr., 11 min.	Identified / Detected 7 times		
183 Southbound at Guadalupe St. F3	400	46	Congestion	17:12	1 hr., 18 min.	Identified / Detected 2 times		

Open | New | Ignore

Ready | ATMS Active | DMS Active | NUM


Incident Evaluation of: US 0183 Northbound at Metric Blvd. F3 : Incident Number: 49
Incident Report Page 1
Incident Report Page 2
LCS Control: NB
LCS Control: SB
DMS Control: NB
DMS Control: SB
Roadway
US 0183 Northbound
REQUIRED FIELDS in BLUE
Location
Before
At
After
Cross Street
Entrance Ramp
Exit Ramp
Detector Station
Metric Blvd. F3
Lanes Blocked
Freeway / 2 Way Traffic
Frontage
Lanes
All Lanes
1 2 3
Entrance Ramp
Exit Ramp
Connector
Turn Around
Interchange
Detour
Incident Type
Collision
Abnormal Congestion
Overturn
Stall
Abandonment
Vehicle on Fire
Road Debris
HAZMAT Spill
Public Emergency
Notify
City Police Department
County Sheriff
County Constable
City EMS
County EMS
City Fire Department
County Fire Department
Traffic Signal Operations
TxDOT Maintenance
TxDOT ATMS Operations
TxDOT Courtesy Patrol
Media
PAGING ENABLED
Send Page
Coordinates
Block
TxRef Marker
8900
Latitude, Y
10108393.31000000
Longitude, X
3120088.71000000
Incident Source
Detected
Reported
Incident Status
FALSE ALARM
VERIFIED
MOVED
CLEARED
Comments
Routine Traffic
Primary Camera
Logged: 11 / 16 / 2004 17 : 24
Cleared: 0 / 0 / 0 0 : 0
OK
Cancel


ATMS Traffic Conditions Display
File Map Image Devices Events Conditions Features Window Help
183
METRIC BLVD
35
Ready
Mode: Pointer
6:34 PM
11/16/200
BBURK
1


Window Help
dents
M18
I5
(778) ROCKWOOD APTS
M07
I3
I6
I4
B 7
M13
I1
B 6
(788) 1100 Taulbee Ln
M05
I2
DC2
M14
E 4
B 4
Available_Units(2)
M25
M27
MR22
MR16
SO6
MR26
M09
Tool Bar
main
Available_Units(1)
M27
M20
M10
M19
MR16
SO6
DC3
M18
M13
DC2
M14
M21
MR17
SF2
DC5
M04
MR01
DIV1
M12
SO4

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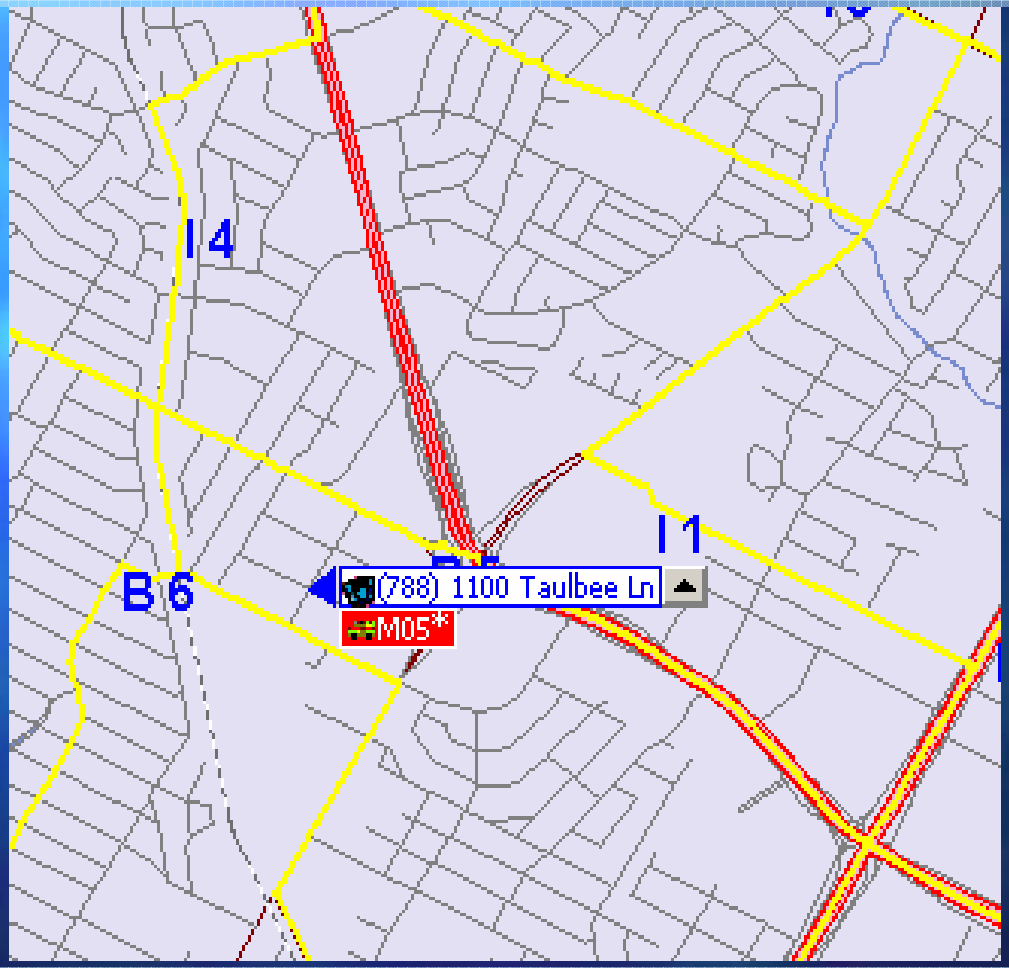

Progress

- Original DATEX transport converted to XML
- TxDOT XML Tester and docs complete
- TxDOT completing C2C infrastructure
- TriTech completing CAD integration and test

Concerns for Future

- Integrate weather information
- Video images to first responder
- Patience and understanding needed
- Changes in systems may be significant
- Emerging conflicting/competing standards (Wi-Fi, Wi-Max, JXDD)
- FHWA funding needed to encourage resolution between standards

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